

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION**

NABORS DRILLING TECHNOLOGIES
USA, INC.,

Plaintiff,

 \mathbf{y}_i

HELMERICH & PAYNE INTERNATIONAL
DRILLING CO., et al.,

Defendants.

[illegible]

Civil Action No. 3:20-cv-03126-M

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

This Order addresses the claim construction disputes presented by Plaintiff and Counter-Defendant Nabors Drilling Technologies USA, Inc. (“Nabors”) and Defendants and Counter-Claimants Helmerich & Payne International Drilling Co., Helmerich & Payne Technologies LLC, and Motive Drilling Technologies, Inc. (collectively, “H&P”) in *Nabors Drilling Technologies USA, Inc. v. Helmerich & Payne International Drilling Co., et al.*, Case No. 3:20-cv-03126. Having considered the arguments and evidence presented by the parties at the claim construction hearing, the Court issues this Order addressing claim construction disputes as to the patents asserted by Nabors. The Court will shortly issue a separate order addressing the claim construction disputes covering the patents asserted by H&P.

I. BACKGROUND

This is a patent infringement lawsuit between two providers of drilling services in the oil and gas industry. Nabors and H&P each assert patents generally relating to systems and methods for computerized drilling control and rotary steerable systems.

Nabors asserts that H&P infringes certain claims of seven asserted patents: U.S. Patent No. 7,802,634 (“the ’634 Patent”), U.S. Patent No. 7,823,655 (“the ’655 Patent”), U.S. Patent No. 7,860,593 (“the ’593 Patent”), U.S. Patent No. 8,360,171 (“the ’171 Patent”), U.S. Patent No. 8,510,081 (“the ’081 Patent”), U.S. Patent No. 8,528,663 (“the ’663 Patent”), and U.S. Patent No. 10,672,154 (“the ’154 Patent”) (collectively, the “Nabors asserted patents”). Am. Compl. (ECF No. 37) ¶ 30. For purposes of this Order, the parties seek agreed constructions for terms in the ’634, ’655, and ’081 patents, and dispute the meaning of certain claim terms in the ’593, ’171, ’663, and ’154 patents, which are discussed in more detail below.

After Nabors filed suit, H&P filed petitions to institute *inter partes* review (“IPR”) challenging all asserted claims in the Nabors asserted patents. ECF No. 87. The Patent Trial and Appeal Board (“PTAB”) has instituted review of the ’593 patent, and declined to institute review of the remaining Nabors asserted patents, namely the ’663, ’655, ’081, ’171, ’634, and ’154 patents.¹ See ECF Nos. 103, 104, 112.

II. LEGAL STANDARD

A. General Principles of Claim Construction

The construction of disputed claims is a question of law for the court. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 971–72 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996). “Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the

¹ *Helmerich & Payne Int’l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-01044, Paper No. 11 (PTAB Jan. 4, 2022) (’663 patent); *Helmerich & Payne Int’l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-01043, Paper No. 12 (PTAB Dec. 10, 2021) (’154 patent); *Helmerich & Payne Int’l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-01018, Paper No. 11 (PTAB Dec. 9, 2021) (’634 patent); *Helmerich & Payne Int’l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-00897, Paper No. 12 (PTAB Nov. 10, 2021) (’171 patent); *Helmerich & Payne Int’l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-00671, Paper No. 12 (PTAB Oct. 1, 2021) (’081 patent); *Helmerich & Payne Int’l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-00621, Paper No. 12 (PTAB Sept. 21, 2021) (’655 patent).

claim.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (citation omitted). Accordingly, a proper construction “stays true to the claim language and most naturally aligns with the patent’s description of the invention.” *Id.* (citation omitted).

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). Courts first “look to the words of the claims themselves . . . to define the scope of the patented invention.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (citation omitted). The claim terms are “generally given their ordinary and customary meaning,” but “a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history.” *Id.* (citation omitted). The “ordinary and customary meaning” of the terms in a claim is “the meaning that the term[s] would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips*, 415 F.3d at 1313.

When the meaning of a term to a person of ordinary skill in the art is not apparent, a court is required to consult other sources, including “the words of the claims themselves, the remainder of the specification, the prosecution history, extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Id.* (citation omitted). A court must consider the context in which the term is used in an asserted claim or related claims in the patent, being mindful that “the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.* The specification is “always highly relevant to the claim construction analysis” and is “the single best guide to the meaning of a

disputed term.” *Id.* at 1315 (quoting *Vitronics*, 90 F.3d at 1582). For example, should the specification reveal that a claim term has been given a special definition by the patentee that is different from the ordinary meaning of the term, the inventor’s lexicography is controlling. *Id.* at 1316. Furthermore, if the specification reveals an intentional disclaimer or disavowal of claim scope by the patentee, the claim scope dictated by the specification is controlling. *Id.*

Finally, in construing claims, a court may consult extrinsic evidence, including “expert and inventor testimony, dictionaries, and learned treatises.” *Phillips*, 415 F.3d at 1317 (citing *Markman*, 52 F.3d at 980). Technical dictionaries may assist a court in “‘better understand[ing] the underlying technology’ and the way in which one of skill in the art might use the claim terms.” *Id.* at 1318 (quoting *Vitronics*, 90 F.3d at 1584 n.6). Expert testimony may also be helpful to “provide background on the technology at issue, to explain how an invention works, to ensure that the court’s understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field.” *Id.* (citation omitted).

Although extrinsic evidence may “shed useful light on the relevant art,” it is considered “less significant than the intrinsic record.” *Id.* at 1317 (quoting *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004)). More simply, “extrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” *Id.* at 1319. Accordingly, “a court should discount any expert testimony ‘that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.’” *Id.* at 1318 (quoting *Key Pharms. v. Hercon Labs. Corp.*, 161 F.3d 709, 716 (Fed. Cir. 1998)).

B. Indefiniteness

Title 35, § 112(b) of the United States Code requires that a patent specification shall “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.” The Supreme Court has held this definiteness provision “to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). “The claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). If a claim does not satisfy these requirements, it is invalid as indefinite under § 112. *Nautilus*, 572 U.S. at 901. “[I]ndefiniteness is a question of law and in effect part of claim construction.” *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

III. AGREED CONSTRUCTIONS

The parties have agreed to the following constructions to apply to the Nabors asserted patents, as set forth in the Joint Claim Construction Chart. ECF No. 97.

Disputed Term	Agreed Construction
“the electronic data” <ul style="list-style-type: none"> • ’634 patent, claims 1, 7 	“data including quill position data, magnetic-based toolface orientation data and gravity-based toolface orientation data”
“at least one of gravity-based toolface orientation data and magnetic-based toolface orientation data” <ul style="list-style-type: none"> • ’634 patent, claim 1 	“at least one gravity-based toolface orientation data and at least one magnetic-based toolface orientation data”
“user-viewable display” <ul style="list-style-type: none"> • ’634 patent, claim 1 	“display viewable to the directional driller”
“a plurality of drilling operation parameters” <ul style="list-style-type: none"> • ’655 patent, claim 1 	“two or more parameters of a drilling operation other than actual toolface orientation”
“a drilling operation parameter” <ul style="list-style-type: none"> • ’655 patent, claim 17 	“a parameter of a drilling operation other than actual toolface orientation”

order of claim steps • '593 patent, claim 19	The method steps must occur in the order that they are written.
"a toolface advisory" • '081 patent, claim 1	"recommended toolface orientation"
"configured to" • '154 patent, claims 1, 4, 6	"actually configured to and not merely capable to"

IV. CONSTRUCTION OF DISPUTED TERMS

Of the Nabors asserted patents, the parties dispute the meaning of certain terms in the '593, '663, '171, and '154 patents. For each, the Court will first introduce the relevant patent before discussing the disputed terms.

A. The '593 patent: "Well prog execution facilitation system and method"

The '593 patent discloses a system for "prog analysis and execution." '593 patent, at 2:9–10. The '593 patent explains that "[a] well prognosis (prog) is generally understood in the drilling industry to be a detailed and lengthy document containing specifications, goals, plans, etc. for drilling and completing a well." *Id.* at 1:6–9. The '593 patent discloses a "project plan execution system," in which a computer system may be "operably coupled" with an interface engine, an action item development engine, and a sensor engine, in which the computer system receives and stores a project execution prog and communicates with these engines to analyze the prog and control well drilling operations in according with the prog's specifications. *Id.* at 2:1–8. In doing so, the '593 patent purports to improve prior art by providing an automated system for compiling, analyzing, and executing well progs. *Id.* at 1:45–62.

The parties seek construction of one term in the '593 patent, "receiving a well prog," which appears in asserted independent claim 19:

A method for controlling a well drilling operation, comprising:

receiving a well prog;

converting the well prog into a computer readable format;

assessing the converted well prog to identify action items;
 associating a response with each identified action item; and
 controlling a well drilling operation in accordance with the responses associated
 with each identified action item from the well prog.

'593 patent, at 11:37–45 (emphasis added).

On October 18, 2021, the PTAB instituted review of claims 19–27 of the '593 patent. *Helmerich & Payne Int'l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-00672, Paper No. 11 (PTAB Oct. 18, 2021) (“'593 patent Inst. Dec.”). In doing so, the PTAB construed “well prog” to have “its ordinary and customary meaning of a document containing information for planning and chronicling the steps of drilling a well, and that the well prog may be in the form of a non-computer readable document.” *Id.* at 14.

1. “receiving a well prog”

Disputed Term	Nabors’s Proposed Construction	H&P’s Proposed Construction	The Court’s Construction
“receiving a well prog” <ul style="list-style-type: none"> '593 patent, claim 19 	Plain and ordinary meaning, i.e., the system receives a well program /prognosis information (a.k.a. the well plan)	receiving a document in a non-computer readable format that contains specifications, goals, and plans for drilling and completing a well	Receiving a document, which may be in a non-computer readable format, that contains information planning and chronicling the steps of drilling a well

a. The Parties’ Positions

Nabors maintains that no construction of “receiving a well prog” is necessary in light of the specification, which describes a well prog as being “generally understood” in the drilling industry as “containing specifications, goals, plans, etc. for drilling and completing a well,” for

which there is no “universal standardization” for the format, structure, and content of a prog. *See* ECF No. 88, at 11–12 (quoting ’593 patent, at 1:6–44, 4:9–15).

H&P contends that Nabors’s proposal improperly broadens the claim to include not just receiving a well prog, but “some amorphous type of well prog ‘information.’” ECF No. 92 at 10. Accordingly, H&P proposes a construction that clarifies that the well prog contains “specifications, goals, and plans for drilling and completing a well.” In addition, H&P proposes that, because claim 19 includes the step of “converting the well prog into a computer readable format” after the well prog is received,² the well prog must necessarily be received in a non-computer readable format, else the “converting” step is superfluous.

b. The Court’s Construction

Here, the parties present two disputes regarding meaning of “receiving a well prog” in claim 19 of the ’593 patent: first, what information is received; and second, whether the well prog must be received in a computer-readable format.

As to the first issue, the Court finds that H&P’s proposed construction improperly requires a well prog to consist of “specifications, goals, and plans for drilling and completing a well,” contrary to the specification’s repeated teaching that there is no fixed standard or requirement for what a well prog contains. *E.g.*, ’593 patent, at 1:6–8 (a well prog is “generally understood” to contain “specifications, goals, plans, *etc.*” (emphasis added)); *id.* at 1:29–31 (“*[T]*ypically . . . a drilling operation prog *may* include a general description of the well to be drilled” (emphasis added)); *id.* at 1:32–44 (“*[O]*ther activities generally detailed in a prog *may* include operational instructions based on well depth, spud depth, . . . filing of governmental forms, . . . when to order more pipe or cement, . . . *etc.*”); *id.* at 4:9–19 (“A well prognosis, or a

² As stated above, the parties agree that the claimed steps of this method claim must be performed in the order recited in claim 19. *See* ECF No. 97.

well program, . . . is *generally* known to be a detailed document containing the information various experts contribute to plan for and chronicle the steps of drilling a well, which *in general* includes all aspects surrounding the creation of an operational well, including planning, drilling, and completing.” (emphasis added)); *id.* at 7:17–19 (“An exemplary prog excerpt **400** is shown in FIG. 4, which illustrates the *plurality of details and specifications* that *may* be contained in a prog.” (emphasis added)).

In light of the specification’s repeated characterization of a well prog in broad, general, and unrestrictive terms, H&P’s proposed construction not only impermissibly narrows the meaning of “well prog” to one isolated description, but also rigidly requires that the well prog contain specifications, goals, *and* plans, as opposed to some other combination of information that may appear in a prog, as contemplated by the specification. In addition, the Court finds that H&P’s concerns about “some amorphous type of well prog ‘information,’” in Nabors’s proposed construction are disingenuous, given that H&P advocates construing well prog with equally amorphous and undefined terms such as “goals” and “plans.”

H&P points to the following disclosure in the specification as grounds for its construction, arguing that Nabors’s proposal disregards the fact that each prog contains “critical information,” which H&P contends it collectively describes as “specification, goals, and plans for drilling and completing a well”:

[D]espite the distinctive structure and format of progs, there are certain types of information, generally referred to herein as critical information, that are generally included in every prog. Critical information may be distinguishable or identified by particular elements in the prog, such as words, characters, symbols, or phrases that are generally associated with the particular critical information. These identifying elements generally indicate to one skilled in the drilling art that a particular event, activity, routine, occurrence, or other happening, within the drilling operation is being addressed in the prog.

’593 patent, at 1:12–23.

However, the Court concludes that this description of “critical information” does not support H&P’s proposal. First, this passage contemplates that a well prog may address a particular event within the drilling operation, and thus implicitly suggests that a well prog need not be always directed toward drilling and completing a well, as opposed to some other discrete event or happening within a drilling operation. *Cf. id.* at 7:3–5 (“[T]ypical activities . . . described in a project execution prog include any activity understood to one skilled in the art to *relate* to execution of the project (drilling the well).” (emphasis added)). Second, this passage indicates although each well prog may contain critical information, it does not suggest that what qualifies as critical information is consistent across all progs, or even that “specifications, goals, and plans” qualify as critical information as described in the ’593 patent.

Regarding the second issue, H&P is correct that the language of claim 19 recites “receiving a well prog” and then “converting the well prog into a computer readable format,” which could suggest that because the prog received is converted *into* a format that is computer readable, it is received in a non-computer readable format. *See* ’593 patent, cl. 19. However, that logic does not extend to unasserted claim 15, which contains the disputed term “receiving a well prog” but does not describe converting it into a computer readable format. *Id.* at cl. 15.³

H&P contends that claim 15 and claim 19 cover different embodiments of the invention disclosed in the ’593 patent, namely that claim 15 covers an embodiment involving copying a text data file into a computer system, which Nabors contends would necessarily involve receiving the well prog in a computer readable format. *See* ECF No. 92 at 11-12. In doing so,

³ Claim 15 of the ’593 patent recites: “A non-transitory computer program embodied on a computer readable medium, wherein the computer program is configured to control a method for analyzing a well prog, comprising: receiving a well prog; analyzing the well prog, determining and marking potential events, and determining action items corresponding to identified potential events in the well prog; and controlling a well drilling operation in accordance with the determined action items from the well prog.”

H&P seemingly argues that “receiving a well prog” in claim 15 means something different than in claim 19. However, there is a presumption that “the same terms appearing in different portions of the claims should be given the same meaning unless it is clear from the specification and prosecution history that the terms have different meanings at different portions of the claims.” *PODS, Inc. v. Porta Stor, Inc.*, 484 F.3d 1359, 1366 (Fed. Cir. 2007); *see also Phillips*, 415 F.3d at 1314 (“Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.”). H&P has identified nothing in the specification or the prosecution history suggesting that “receiving a well prog” means anything different in claim 19 than claim 15.

Nor does the specification support construing “receiving a well prog” as being limited to a non-computer readable format. As discussed, the specification explains that “each company’s format and structure [for progs] is generally distinct,” and there is no express requirement that a prog be in a non-computer readable format, such as being a paper copy, as opposed to some digital or electronic version. *See* ’593 patent, at 1:11–12. Nor does H&P point to extrinsic evidence, such as expert testimony, indicating that a POSITA would understand a well prog to refer exclusively to a non-computer readable or paper document. As acknowledged by H&P, the specification describes an embodiment involving “copying a text data file into the computer system” as a means of entering a prog into a computer system, which indicate that the prog could be a data file. *Id.* at 6:58–61. At most, the specification is clear that the definition of a well prog includes non-computer readable progs, such as a hard copy document, but there is no support that a well prog is exclusively limited to non-computer readable formats.⁴

⁴ The Court notes that the PTAB reached a similar conclusion, interpreting claim 19 in the ’593 patent as providing that “the well prog *may* be in the form of a non-computer readable document,” but was not required to be in a non-computer readable format. *See* ’593 patent Inst. Dec. at 13–14.

H&P’s proposed construction is effectively an effort to import what is essentially the infringement inquiry into claim construction; to the extent claim 19 recites a “converting” step, the relevant inquiry is whether the patentee can establish that that step is performed by the accused infringer as part of the claimed method, and not whether “well prog” must be construed as being received in a certain format prior to conversion. The Court declines to add an additional limitation to the meaning of “well prog” by implication.

To that end, the Court finds that the remainder of Nabors’s proposed construction—“i.e., the system receives a well program/prognosis information (a.k.a. the well plan)”—provides minimal, if any, additional clarification beyond what is already apparent from the plain language of the term and the ample descriptions of well progs in the specification. Accordingly, the Court declines to adopt Nabors’s proposal in full, and instead construes “receiving a well prog” as the PTAB did, as having its ordinary and customary meaning of receiving a document, which may be in a non-computer readable format, that contains information planning and chronicling the steps of drilling a well.

B. The ’663 patent: “Apparatus and methods for guiding toolface orientation”

The ’663 patent discloses an apparatus and methods for guiding a directional and/or horizontal drilling operation. The ’663 patent describes a number of factors that will cause a well to be drilled on or off course, and purports to address a long-felt need in the prior art to more accurately guide and help a driller keep the wellbore toolface in the correct orientation and to keep the well on target. ’663 patent, at 2:45–57. The specification describes a drilling apparatus, a receiving apparatus, and a display apparatus, and discloses various embodiments to

assist a human operator in obtaining, monitoring, and adjusting the drilling direction. *Id.* at 2:61–4:3.

The parties identify two claim construction disputes relating to the '663 patent: first, whether the preamble in claim 12—“a method of directing a drilling operation in a wellbore”—is limiting, and second, the meaning of “the recommended toolface orientation” in claims 12, 14, 15, 17, and 20. Claim 12 is an independent claim, from which claims 14, 15, 17, and 20 all depend. Claim 12 recites:

A method of directing a drilling operation in a wellbore comprising:

[a] operating a drilling apparatus;

[b] receiving and displaying electronic data, wherein the electronic data includes [1] quill position data, [2] actual toolface orientation data, and [3] recommended toolface orientation data; and

[c] adjusting the drilling apparatus to move the toolface toward the recommended toolface orientation.

Id. at cl. 12 (emphasis added).

1. “a method of directing a drilling operation in a wellbore”

Disputed Term	Nabors's Proposed Construction	H&P's Proposed Construction	The Court's Construction
“a method of directing a drilling operation in a wellbore” <ul style="list-style-type: none"> '663 patent, claim 12 	The preamble is not limiting	The preamble is limiting	The preamble is not limiting

a. *The Parties' Positions*

Nabors contends that claim 12's preamble is not limiting, pointing to the presumption that claim preambles are not normally limiting. *See* ECF No. 88, at 23 (citing *Georgetown Rail Equip. Co. v. Holland L.P.*, 867 F.3d 1229, 1236 (Fed. Cir. 2017)). H&P responds that the “in a wellbore” language in the preamble is limiting because it gives meaning to the body of the claim and defines the invention.

b. The Court's Construction

“Whether a preamble stating the purpose and context of the invention constitutes a limitation of the claimed process is determined on the facts of each case in light of the overall form of the claim, and the invention as described in the specification and illuminated in the prosecution history.” *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1572–73 (Fed. Cir. 1996). “A preamble is not a claim limitation if the claim body ‘defines a structurally complete invention . . . and uses the preamble only to state a purpose or intended use for the invention.’” *Georgetown Rail*, 867 F.3d at 1236; *see also Marrin v. Griffin*, 599 F.3d 1290, 1294 (Fed. Cir. 2010) (“[U]se descriptions . . . are rarely treated as claim limitations.”); *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002) (“[P]reambles describing the use of an invention generally do not limit the claims because the patentability of apparatus or composition claims depends on the claimed structure, not on the use or purpose of that structure.”).

Here, the preamble’s recitation of “a method of directing a drilling operation in a wellbore” is a statement of intended use of the claimed method, and identifies no additional steps or structure for the claimed method. Put differently, the preamble is not limiting because “deletion of the preamble phrase does not affect the structure or steps of the claimed invention.” *Catalina*, 289 F.3d at 809. Moreover, “a drilling operation in a wellbore” is not an inventive or patentably distinct aspect of the claimed invention, as the specification recognizes that drilling operations, including directional or horizontal drilling, are conventional. *E.g.*, ’663 patent, at 2:43–46; *see also Arctic Cat Inc. v. GEP Power Prod., Inc.*, 919 F.3d 1320, 1329–30 (Fed. Cir. 2019) (preamble phrase “[a] personal recreational vehicle” not limiting because it described conventional, rather than inventive, aspects of the claimed invention).

2. “the recommended toolface orientation”

Disputed Term	Nabors’s Proposed Construction	H&P’s Proposed Construction	The Court’s Construction
“the recommended toolface orientation” <ul style="list-style-type: none"> • ’663 patent, claims 12, 14–15, 17, 20 	Plain and ordinary meaning, e.g., the recommended or desired toolface orientation, a.k.a. toolface advisory. (See ‘081 Patent, Claim 1)	“displayed recommended toolface orientation that depends on the recommended toolface orientation data”	Plain and ordinary meaning, e.g., the recommended or desired toolface orientation, also known as “toolface advisory”

a. The Parties’ Positions

H&P maintains that the antecedent for “the recommended toolface orientation” in claim 12, element [c] is “recommended toolface orientation data” in element [b3], and accordingly requests a construction clarifying that “the recommended toolface orientation” in the adjusting step [c] is and depends on the same data being received and displayed in [b3]. According to H&P, the claim term otherwise lacks a clear antecedent and would be indefinite. Nabors responds that claim 12 of the ’663 Patent involves three steps: “operating” a drilling apparatus, “receiving” and displaying electronic data, including recommended toolface orientation data, and “adjusting the drilling apparatus” toward the recommended toolface orientation, but nothing requires that the orientation the drilling apparatus is adjusted toward is limited to or depends on the same orientation data that is received and displayed. Accordingly, Nabors advocates that this term should have its plain and ordinary meaning.

b. The Court’s Construction

The dispute as to this term distills down to whether “the recommended toolface orientation” in element [c] of claim 12 refers to or depends on the “recommended toolface orientation data” in the preceding claim element [b3]. Specifically, H&P seeks a construction requiring that the recommended toolface orientation is both (1) displayed and (2) depends on the

recommended toolface orientation data displayed. The Court concludes that although the “recommended toolface orientation” in [c] is related to the data in [b3], it does not consist of or depend on the data that is displayed in element [b], as H&P proposes. Accordingly, the Court construes “the recommended toolface orientation” to have its plain and ordinary meaning, *e.g.*, the recommended or desired toolface orientation, a.k.a. toolface advisory.

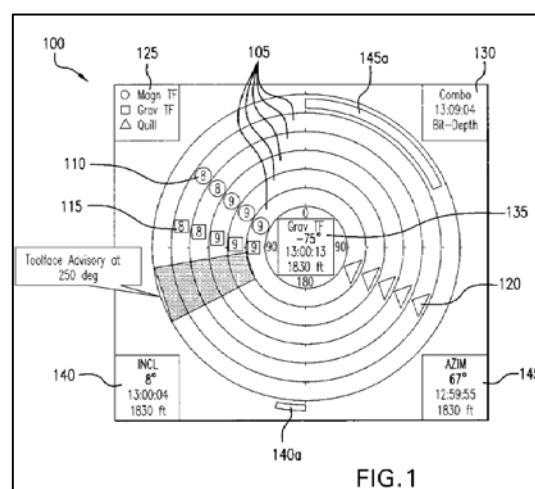
There is a presumption that the same terms appearing in different portions of the claims have the same meaning, and thus, “recommended toolface orientation” presumptively means the same thing across claim 12. *See PODS, Inc.*, 484 F.3d at 1366. However, this phrase is used in two different ways in claim 12, first as an adjectival phrase modifying the noun “data” (“recommended toolface orientation data”), and secondly as a standalone noun, *i.e.*, the toolface orientation that is recommended. Moreover, the terms appear in different steps of the claimed method and are used in different ways; in element [b3], the electronic data received and displayed includes recommended toolface orientation data, but in element [c], the drilling apparatus is adjusted toward recommended toolface orientation, without reference to the data in the preceding step. Put differently, although they appear to be related, the exact relationship between recommended orientation data which is received and displayed and the recommended orientation itself is not immediately apparent from the claim language, but at minimum, there is no explicit requirement that the recommended orientation itself is the same as or depends on—such as, for example, being calculated or derived from—the orientation data displayed.

The specification defines “recommended toolface orientation” as being synonymous with “toolface advisory.” ’663 patent, at 4:43–46 (“[D]isplaying the relationship between the toolface, the quill position, and the recommended toolface orientation, *i.e.*, the toolface advisory, can be surprisingly useful in increasing accuracy of drilling.” (emphasis added)); *see also id.* at

14:22–25 (“The recommended toolface orientation, i.e., toolface advisory, may be used either with or without the scoring discussed in the present disclosure.”). The ’663 patent also refers to a toolface advisory as a “TFD.” *E.g., id.* at 9:65–67 (“A desired or toolface advisory TFD **210** may be determined to steer the well to a target or along a well plan.”).

The specification does not expressly define “recommended toolface orientation data.” At most, it describes one embodiment where the recommended toolface orientation data includes specific types of data, such as gravity-based, magnetic-based, azimuth, or inclination toolface orientation data, or combinations thereof. *Id.* at 4:65–5:3.

The specification seemingly contemplates various embodiments where information relating to the recommended toolface orientation—variously described as the recommended toolface orientation, toolface advisory, or TFD—is displayed. However, none of these supports H&P’s proposed construction that definitively equates the recommended orientation with the recommended orientation data being displayed, or even that the recommended orientation, as opposed to some data merely related to the recommended orientation, is displayed. Figure 1 is described as “an example of a toolface advisory *sector* . . . showing an example toolface advisory of 250 degrees.” *Id.* at 7:25–27 (emphasis added).



Id. fig.1.

However, other examples indicate that the recommended orientation itself need not necessarily be displayed, so long as the relationship between the actual toolface position, quill position, and recommended orientation is depicted. *Cf. id.* at 4:43–46 (“[D]isplaying *the relationship* between the toolface, the quill position, and the recommended toolface orientation . . . can be surprisingly useful in increasing accuracy of drilling.” (emphasis added)). For instance, the specification describes an embodiment where a percent difference between a measured toolface angle and a toolface advisory is displayed. *See id.* at 10:33–34 (“[T]he percent difference between TFD and TFM may be displayed.”). A further embodiment is described in which “any toolface reading acquired as being inside or outside the toolface advisory sector” could be scored—for example, awarding 10 points for being on target, 5 points for being 5 degrees off target—and displayed. *Id.* at 10:35–67. Thus, while the specification describes the display of various metrics, *i.e.* data, informing on the actual toolface position vis-à-vis the recommended toolface orientation, the specification does not support H&P’s proposed construction that “the recommended toolface orientation” necessarily always means the “*displayed* recommended toolface orientation data.” For example, if the recommended orientation data displayed is the driller’s toolface reading score of 10 for being 10% off target, as described in a preferred embodiment, it would be nonsensical to construe the recommended toolface orientation as being that score of 10. Moreover, the specification suggests that, in certain embodiments, the recommended toolface orientation data is only optionally displayed. *E.g., id.* at 3:18–20 (“In yet another embodiment, the display apparatus is further adapted to display the recommended [toolface] orientation data.”). Thus, to interpret “recommended toolface orientation” consistently across all claims, the Court’s construction must include within its scope an orientation not necessarily displayed.

In addition, there is no support for H&P’s proposal that the recommended toolface orientation “*depends on* the recommended toolface orientation data.” Put differently, there does not appear to be any discussion of the recommended orientation being altered or changed because of data that is displayed. For example, if the percentage difference between the measured toolface angle and toolface advisory is displayed, there is nothing indicating that the recommended orientation is altered as a result.

Instead, the specification supports a reading that the “recommended toolface orientation” is a fixed, optimal target, and the recommended toolface orientation data displayed is either a visual depiction of that orientation or derived from that target orientation, for example, by measuring the difference between the recommended orientation and the actual toolface position, scoring the toolface readings relative to the recommended orientation, or some derivative of the recommended orientation, be it gravity-based, magnetic-based, azimuth, or inclination toolface orientation data, a combination thereof, etc. *See, e.g., id.* at 12:59–13:13. As such, the specification indicates that the recommended toolface orientation data depends on the recommended toolface orientation, and not the other way around.

Accordingly, the Court concludes that H&P’s proposed construction is not mandated by the claim language and impermissibly narrows the claim scope contrary to the specification. “The recommended toolface orientation” is construed to have its plain and ordinary meaning, *e.g.*, the recommended or desired toolface orientation, also known as “toolface advisory.”

C. ’171 patent: “Directional drilling control apparatus and methods”

The ’171 patent discloses a method for controlling directional drilling using a quill to steer a hydraulic motor when elongating a wellbore in a direction having a horizontal component, wherein the quill and the hydraulic motor are coupled to opposing ends of a drill string. ’171 patent, at Abstract. Conventionally, directional drilling requires determining the

current toolface orientation, and if the drilling direction needs adjustment, an operator rotating the drill string changes the toolface orientation. *Id.* at 1:30–37. The ’171 patent describes how reorienting the toolface in a drilling operation can be complex, labor intensive, and often inaccurate, because it requires the operator to manipulate various things to position the toolface properly, and each adjustment has different effects and must be considered in combination with other drilling requirements. *Id.* at 1:46–54. The invention disclosed in the ’171 patent describes using downhole sensors to evaluate various operating parameters, and monitoring a drilling operation parameter indicative of a difference between the actual toolface orientation and a desired toolface orientation, and then adjusting the position of the quill by an amount that is dependent upon the monitored parameter. *Id.* at 2:63–67, 17:1–31.

The parties dispute the meaning of one term in claim 13 of the ’171 patent, “comparable operating parameter.” Claim 13 recites:

A method of elongating a wellbore in a direction having a horizontal component comprising:

- detecting a current toolface orientation with respect to vertical;
- comparing the current toolface orientation to a desired toolface orientation based on operating parameters;
- employing at least one controller to analyze whether one or more comparable operating parameter has been previously recorded;
- generating drilling control signals to oscillate a quill based on any of the previously recorded drilling operation parameter to redirect the toolface to a corrected drilling path; and
- rotating a tubular along the corrected drilling path.

’171 patent, at cl. 13 (emphasis added).

1. “comparable operating parameter”

Disputed Term	Nabors’s Proposed Construction	H&P’s Proposed Construction	The Court’s Construction
“comparable operating parameter” <ul style="list-style-type: none"> • ’171 patent, claim 13 	Plain and ordinary meaning, e.g., the operating parameter(s), e.g., WOB, torque, RPM, pressure, ΔP , data received from a toolface orientation sensor, depth, ROP, that was compared to the current toolface orientation in the previous step	Indefinite	Plain and ordinary meaning, <i>i.e.</i> operating parameters such as WOB, torque, RPM, pressure, ΔP , data received from a toolface orientation sensor, depth, and ROP, that was compared to the current toolface orientation in the previous step of the claimed method

a. The Parties’ Positions

Nabors argues that “comparable operating parameter” should be construed according to its plain and ordinary meaning, because a POSITA would know, based on the language of claim 13 and the specification, that this term means an operating parameter of the same type, *e.g.*, WOB, torque, RPM, pressure, ΔP ,⁵ data received from a toolface orientation sensor, depth, and ROP, that was compared to the current toolface orientation in the previous step of the claimed method.

H&P contends that “comparable operating parameter” as it appears in claim 13 is indefinite, because the claim and specification do not inform a POSITA about the scope of the claimed invention. Specifically, H&P contends that “comparable” is a term of degree indicating similarity, and the specification provides no additional context or range from which a POSITA could know whether operating parameters are sufficiently similar, or “comparable,” so as to fall within the claim’s scope. Nabors responds that nothing in the language of claim 13 nor the

⁵ The specification of the ’171 patent refers to a mud motor ΔP in the context of “a pressure differential value or range across the mud motor of the BHA,” which “may be alternatively or additionally calculated, detected, or otherwise determined at the surface, such as by calculating the difference between the surface standpipe pressure just off-bottom and pressure once the bit touches bottom and starts drilling and experiencing torque.” ’171 patent, at 7:1–12.

specification requires an assessment of similarity, but rather, the word “comparable” refers to a requirement that a parameter of the same type be evaluated.

b. The Court’s Construction

The issue presented is whether, based on the specification and prosecution history, claim 13 of the ’171 patent is indefinite because the use of the term “comparable operating parameter” in that claim fails to inform a POSITA about the scope of the claimed invention with reasonable certainty. The Court concludes that the term “comparable operating parameter” is not indefinite.

Claim 13 describes a method consisting of detecting current toolface orientation with respect to vertical, comparing that current orientation to a desired orientation “based on operating parameters,” and then employing controller(s) to analyze “whether one or more comparable operating parameters has been previously recorded.” *Id.* at cl. 13. The method then describes redirecting the toolface to a corrected drilling path based on any of the previously recorded drilling operation parameters, and rotating a tubular along that corrected path. *Id.*

As discussed, the ’171 patent describes configuring various instruments to evaluate physical parameters and variously adjusting drilling operations in light of those parameters. The specification describes such parameters broadly, including such physical properties as pressure, temperature, torque, weight-on-bit (WOB), vibration, inclination, azimuth, toolface orientation in three-dimensional space, and “other downhole parameters.” *Id.* at 2:63–67. Operational parameters may also include actual bit torque and actual mud motor ΔP . *Id.* at 11:46–50.

The Court concludes, based on the plain claim language read in the context of the specification, which describes operating parameters broadly and potentially consisting of numerous different types of physical properties being measured and evaluated, the word “comparable” as used in claim 13 is not a term of degree. Instead, it simply means that the type(s) of parameters being analyzed are the same as those that have been previously recorded.

For example, in the “comparing” step, if the current toolface orientation is compared to a desired toolface orientation based on temperature and vibration, then in the next step, at least one controller is employed to analyze whether temperature and vibration had been previously recorded, and making adjustments accordingly following the remainder of the claimed method.

Accordingly, the Court construes “comparable operating parameter” to have its plain and ordinary meaning, namely operating parameters, such as WOB, torque, RPM, pressure, ΔP , data received from a toolface orientation sensor, depth, and ROP, that was compared to the current toolface orientation in the previous step of the claimed method.

D. The ’154 patent: “3D toolface wellbore steering visualization”

The ’154 patent discloses systems, devices, and methods for visualizing a downhole environment, namely a three-dimensional visualization of a drill plan and toolface for steering purposes. ’154 patent, at 1:6–11. The ’154 patent specification describes how reorienting a toolface in a bore is a complex, labor-intensive process, and the invention disclosed in the ’154 patent describes a more efficient, reliable, and intuitive method for steering a bottom hole assembly (“BHA”). *Id.* at 2:10–17. The three-dimensional visualization of the downhole environment described by the ’154 patent includes depictions of the location and orientation of the BHA and a drill plan, and may also include a toolface dial superimposed on the depiction of the BHA, replicating parameters set by the surface control system and including real time toolface angle data. *Id.* at 3:1–11.

The parties contest the meaning of one term in the ’154 patent, “optimized path,” which appears in independent claim 20. Claim 20 recites:

A method of directing the operation of a drilling system, comprising;

inputting a drill plan into a controller in communication with the drilling system;

driving a bottom hole assembly comprising a drill bit disposed at an end of a drill string;

receiving sensor data from one or more sensors adjacent to or carried on the bottom hole assembly;

calculating, with the controller, a position of the drill bit based on the received sensor data;

determining, with the controller, a range of acceptable deviation from the drill plan;

calculating, with the controller, a positional difference between the drill plan and the calculated position of the drill bit;

determining, with the controller, if the positional difference between the drill plan and the calculated position of the drill bit falls within the range of acceptable deviation from the drill plan;

displaying a three-dimensional visualization based on the drill plan, the sensor data, and the calculated position of the drill bit, wherein the three-dimensional visualization comprises a visual representation of an underground environment from a perspective looking down the drill string, the visualization depicting the positional difference between the drill plan and the calculated position of the drill bit and whether the positional difference between the drill plan and the calculated position of the drill falls within the range of acceptable deviation from the drill plan, the visualization further including an indicator extending from the calculated position of the drill bit and indicating an optimized path toward the drill plan; and

using the display as a reference in directing a change of position of the drill bit.

Id. at cl. 20 (emphasis added).

The original version of claim 20 did not include the “optimized path” language at issue. During prosecution, the examiner rejected a prior version of claim 20 that recited “indicating a direction toward the drill plan” under 35 U.S.C. § 103, in part on the grounds that a prior art reference, *Schuh*, teaches “path/indicator ‘C’ which . . . describes a direction from the drill bit location to the drill plan ‘A.’” ECF No. 88-13, at NABORS_004428. Nabors then submitted amendments, including “indicating an optimized path ~~direction~~ toward the drill plan,” and the rejections were withdrawn. *Id.* at NABORS_004440, _004445, _004451.

1. “optimized path”

Disputed Term	Nabors’s Proposed Construction	H&P’s Proposed Construction	The Court’s Construction
“optimized path” <ul style="list-style-type: none"> ’154 patent, claim 20 	Plain and ordinary meaning, e.g., the best, e.g., efficient, fastest, shortest, path	Indefinite	Indefinite

a. The Parties’ Positions

Nabors contends that “optimized path” should have its plain and ordinary meaning, “e.g., the best, e.g., efficient, fastest, shortest, path.” Nabors points to various disclosures in the specification which it argues make clear that the optimized path is the “best route” by which an off-course drill bit can be returned to the drilling plan. *E.g.*, ECF No. 88, at 29–30 (citing ’154 patent, at 3:12–29, 10:41–49, figs. 5, 6). Nabors also relies on the testimony of its expert, Dr. Rodgers, to argue that the indicator described in claim 20 points in the direction of the drill path, “which would be the solution determined by the automatic drilling system’s controller optimized to provide the path to get back on track with the drill plan.” *Id.* at 34 (citing ECF No. 88-7 (“Rodgers Dec.”) ¶¶ 20).

H&P responds that “optimized path” is indefinite, because neither the specification nor the prosecution history provides objective criteria for determining whether a path toward the drill plan indicated by the indicator, as recited in claim 20, is an “optimized” path. H&P points to both claim 1, which recites “a direction” towards a drill plan, as opposed to an “optimized path,” and the amendment made during prosecution history from “a direction” to “an optimized path,” to argue that claim 20’s optimized path is not just any path towards the drilling plan, but one that must be optimized according to some unspecified priorities. H&P also relies on the declaration of its expert, Mr. Schaaf, who provides examples of various ways in which a path could be deemed “optimized” according to different priorities, resulting in different paths. ECF No. 92 at

24 (citing ECF No. 93, at App. 1–11 (“Schaaf Dec.”)). Without guidance from the claim language or specification as to which specific objective factors to consider and prioritize, H&P argues that a POSITA is unable to determine with reasonable certainty the scope of an indicator indicating an optimized path toward the drill plan, or analyze whether an indicated path is an optimized one, and thus claim 20 is indefinite.

b. The Court’s Construction

The issue presented is whether, based on the specification and prosecution history, claim 20 of the ’154 patent is indefinite because the term “optimized path” as used in that claim fails to inform a POSITA about the scope of the claimed invention with reasonable certainty. The Court concludes that the term “optimized path” is indefinite.

The ’154 patent specification describes how typically, prior to commencing drilling, a target location is identified and “an optimal wellbore profile or drill plan is established,” where such plans are “generally based upon the most efficient or effective path to the target location or locations.” ’154 patent, at 3:12–17. Claim 20 references the drill plan in conjunction with the position of the drill bit, namely calculating “a positional difference between the drill plan and the calculated position of the drill bit”—*i.e.*, comparing the current position of the bit and where it should be according to the drill plan—and determining whether that difference is within the range of acceptable deviation from the plan. *Id.* at cl. 20. The claimed method then describes displaying a three-dimensional visualization based on the drill plan, comprising a representation of the underground environment depicting the positional difference between the drill plan and the calculated position of the drill bit, and further “including an indicator extending from the calculated position of the drill bit and indicating an optimized path toward the drill plan.” *Id.* The specification likewise describes how the disclosed invention “may allow an operator to

visualize the location of the BHA and the drill plan, and in some cases, steer the BHA back to the drilling path along an optimized route.” *Id.* at 3:12–22.

Thus, the “optimized path” term at issue refers to an optimized path for returning the drill bit from its current position back to the planned route according to the drill plan. The plain language of claim 20 describes an indicator that indicates not just any path, but specifically an “optimized” path. Omitting the word “optimized” from claim 20 would give the claim a broader meaning, and accordingly, the “optimized path” language is a narrowing limitation. *See Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (“[C]laims are interpreted with an eye toward giving effect to all terms in the claim.”). This interpretation is supported by comparing claim 20 with claim 1; claim 1 describes a drilling apparatus that displays a visualization showing the positional difference between the location of the drill bit and the drill plan, with an indicator extending from the drill bit’s location “indicating *a direction* toward the . . . depiction of the drill plan.” *Id.* at cl. 1 (emphasis added). Thus, there is a difference between indicating “a direction” toward a drill plan, and indicating an “optimized path” toward a drill plan. *See CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co. KG*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different meanings.”). The prosecution history compels the same conclusion; during prosecution, to overcome a prior art rejection, Nabors amended the relevant portion of claim 20 from “indicating a direction toward the drill plan” to “indicating an optimized path toward the drill plan.” ECF No. 88-12, at NABORS_004451. Accordingly, given that Nabors added the “optimized path” language to overcome a rejection, the Court cannot now disregard it. *See Ajinomoto Co. v. Int’l Trade Comm’n*, 932 F.3d 1342, 1351 (Fed.

Cir. 2019) (“[W]hen a word is changed during prosecution, the change tends to suggest that the new word differs in meaning in some way from the original word.”).

Thus, the Court concludes that “optimized path” must mean something beyond simply a path by which the drill bit can return to the drilling plan. However, neither the intrinsic nor the extrinsic evidence provides objective guidance to know when this limitation is met. The specification is bereft of any guidance on criteria that may be relevant to assessing whether a path for returning a drill bit to the drill plan is optimized; for example, there is no discussion indicating that the fastest, shortest, or most direct route is the optimal approach, or that considerations like speed, distance, or time should be weighed in determining whether a route is optimal. Nabors’s expert Dr. Rodgers seemingly concedes that the ’154 patent provides no guidance on what factors determine whether a path is optimized; he opines that “optimization parameters used in determining an optimized path have no bearing,” and “[a] POSITA would understand that the path was optimized with *some* set of parameters or factors and the visualization indicates the direction towards that optimized path.” Rodgers Dec. ¶ 17 (emphasis added).⁶

In addition, the Court notes that the term “optimized” is a subjective term of degree, dependent on the characteristic sought to be optimized for any given drill plan. *See, e.g., Intell.*

⁶ In its reply, Nabors argues that the ’154 patent specification explains that the “indicator representing the optimized path is the ‘advisory toolface direction,’ which may be calculated by taking the average of three other indicators to determine the best “direction path” back to the drill plan, and is thus not indefinite. ECF No. 94, at 15 (“The Patent goes on to explain that this advisory toolface direction may be calculated by taking the average of the other three indicators 316 (inclination of the wellbore), 318 (azimuth of the wellbore), and 320 (hole depth) to determine the best direction path back to the drill plan.” (citing ’154 patent, at 10:20–50)). However, reviewing the portion of specification relied on by Nabors reveals that Nabors is improperly equating indicator 310, which corresponds to the advisory toolface direction, with a different indicator, contrary to the specification. Specifically, “[i]ndicator **310** gives an advisory toolface direction, corresponding to line 322. The advisory toolface direction represents an optimal direction towards the drill plan.” ’154 patent, at 10:39–43. In contrast, “[i]ndicator **308**, shown in Fig. 3 as an arrow on the outermost edge of the dial **302**, is an indicator of the overall resultant direction of travel of the toolface. This indicator **308** may present an orientation that averages the values of other indicators **316**, **318**, **320**.” *Id.* at 10:43–47.

Ventures I LLC v. T-Mobile USA, Inc., 902 F.3d 1372, 1381 (Fed. Cir. 2018) (“‘[O]ptimiz[ing] . . . QoS’ is a ‘term of degree’ that . . . is ‘purely subjective’ . . .”). Indeed, the specification indicates that there may be multiple optimized paths by which a drill bit is returned to the drill path, thus raising the question of in what capacity the path is being optimized. ’154 patent, at 3:19–22 (“[A]n operator [may] . . . in some cases, steer the BHA back to the drilling path along *an* optimized route.” (emphasis added)). As explained by H&P’s expert Mr. Schaaf, a path could be optimized according to various different, and possibly competing, priorities; for example, a path could be optimized to be the fastest or the cheapest path back to the planned trajectory, or it could be optimized to be the smoothest, so as to minimize the number of turns. Schaaf Dec.

¶ 33. Although the subjectivity here is not expressly dependent on “the unpredictable vagaries of any one person’s opinion,” such as an end user, *e.g.*, *Intell. Ventures*, 902 F.2d at 1381, the ’154 patent implies that, at least in conventional drilling systems, the drilling operator would be involved in evaluating the situation and making judgments about the operation. *E.g.*, ’154 patent, at 1:63–65 (“When deviation from the planned drilling path occurs, drillers must consider the information available to them and then direct the drill back to the original path.”); *id.* at 2:11–15 (“An operator must consider the implications of this textual information, formulate a visual mental impression of the overall orientation of the drilling BHA, and try to formulate a steering plan based on this mental impression, before steering the system.”).

For these reasons, the Court finds Nabors’s proposed construction—plain and ordinary meaning, “*e.g.*, the best, *e.g.*, efficient, fastest, shortest, path”—unpersuasive. Construing “optimized” to mean “best” does not provide any additional guidance on the term’s meaning. Integral questions regarding the scope of this term remain—the path is optimized *as to what*? The path is the “best” *in what regard* and *according to whom*? And as discussed, there is no

support in the specification establishing any particular criteria—such as efficiency, speed, or length—as optimization parameters, and as Mr. Schaaf opined in his declaration, a path may differ depending on the specific attribute being optimized. Moreover, Nabors’s cited cases are distinguishable because in those cases, the characteristic to be optimized was defined or known, or the specification provided guidance on relevant criteria to evaluate. *See InfoGation Corp. v. ZTE Corp.*, 16-CV-01901-H-JLB, 2017 WL 1821402, at *12–13 (S.D. Cal. May 5, 2017) (construing “optimal routes/optimal route” as “recommended route(s) based on one or more criteria,” described in the specification, such as traveling conditions or user preferences that have been provided); *iTimeline, Inc. v. Proclarity Corp.*, C05-1013JLR, 2006 WL 6143242, at *13 (W.D. Wash. June 29, 2006) (construing “optimization” to mean “providing performance with respect to a given characteristic (e.g. speed or flexibility of output) that is superior to the performance of some other possible configuration with respect to that characteristic”).

Nabors is effectively arguing that so long as the path is optimized to *something*, the limitation in claim 20 is satisfied. But under 35 U.S.C. § 112, a patent claim must “particularly point[] out and distinctly claim[] the subject matter” regarded as the invention. Claim 20 imposes a bare requirement that the path be optimized as to some criteria or priority, and the specification provides no guidance on how to distinguish between *a* path for the BHA to return to the drill path, as opposed to a claimed *optimized* path. Put simply, the specification does not provide sufficient guidance on the meaning of “optimized path” to give notice to the public of the boundaries between infringing and innocent activity.

Accordingly, the Court concludes that the specification of the ’154 patent does not inform a POSITA about the scope of “optimized path” with reasonable certainty. H&P has proven that claim 20 of the ’154 patent is indefinite under § 112.

V. CONCLUSION

The Court adopts the constructions set forth above, as summarized in the following table. The Court further finds that claim 20 of the '154 patent is indefinite under § 112 because of the inclusion of the term “optimized path,” and thus Nabors may not pursue its infringement contentions against H&P as to that claim.


The parties are **ORDERED** not to refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are **ORDERED** to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

Term	Construction
“the electronic data” <ul style="list-style-type: none"> '634 patent, claims 1, 7 	“data including quill position data, magnetic-based toolface orientation data and gravity-based toolface orientation data”
“at least one of gravity-based toolface orientation data and magnetic-based toolface orientation data” <ul style="list-style-type: none"> '634 patent, claim 1 	“at least one gravity-based toolface orientation data and at least one magnetic-based toolface orientation data”
“user-viewable display” <ul style="list-style-type: none"> '634 patent, claim 1 	“display viewable to the directional driller”
“a plurality of drilling operation parameters” <ul style="list-style-type: none"> '655 patent, claim 1 	“two or more parameters of a drilling operation other than actual toolface orientation”
“a drilling operation parameter” <ul style="list-style-type: none"> '655 patent, claim 17 	“a parameter of a drilling operation other than actual toolface orientation”
order of claim steps <ul style="list-style-type: none"> '593 patent, claim 19 	The method steps must occur in the order that they are written.
“a toolface advisory” <ul style="list-style-type: none"> '081 patent, claim 1 	“recommended toolface orientation”
“configured to” <ul style="list-style-type: none"> '154 patent, claims 1, 4, 6 	“actually configured to and not merely capable to”
“receiving a well prog” <ul style="list-style-type: none"> '593 patent, claim 19 	“receiving a document, which may be in a non-computer readable format, that contains information planning and chronicling the steps of drilling a well”

“a method of directing a drilling operation in a wellbore” <ul style="list-style-type: none"> • ’663 patent, claim 12 	The preamble is not limiting
“the recommended toolface orientation” <ul style="list-style-type: none"> • ’663 patent, claims 12, 14–15, 17, 20 	Plain and ordinary meaning, <i>e.g.</i> , the recommended or desired toolface orientation, also known as “toolface advisory”
“comparable operating parameter” <ul style="list-style-type: none"> • ’171 patent, claim 13 	Plain and ordinary meaning, <i>i.e.</i> operating parameters such as WOB, torque, RPM, pressure, ΔP , data received from a toolface orientation sensor, depth, and ROP, that was compared to the current toolface orientation in the previous step of the claimed method

SO ORDERED.

May 26, 2022.


BARBARA M. G. LYNN
CHIEF JUDGE